

WHAT IS CLAIMED IS:

1. A solid electrolyte battery comprising:
a positive electrode[.];
5 a negative electrode disposed opposite to said positive electrode;
a separator disposed between said positive electrode and said negative electrode; and
solid electrolytes each of which is disposed between said positive electrode and said
separator and between said separator and said negative electrode, wherein
10 said separator is constituted by a polyolefin[e] porous film, said polyolefin[e] porous
film has a thickness satisfying a range not [smaller]greater than 5 [μ] mm nor [larger]greater
than 15 [μ] mm and a [vacancy ratio]volume porosity satisfying a range not [lower]less than
25 [μ][m] % nor [higher]greater than 60[%] %, and the impedance in said solid electrolyte
15 battery is [higher]greater than the impedance realized at the room temperature when the
temperature of said solid electrolyte battery satisfies a range not [lower]less than 100[°]EC
nor [higher than 160°C.]greater than 160EC.
2. A solid electrolyte battery according to claim 1, wherein said porous
polyolefin[e] film contains polyethylene.
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3. A solid electrolyte battery according to claim 1, wherein said solid electrolyte
is a gel electrolyte containing swelling solvent.
4. A solid electrolyte battery according to claim 1, wherein said electrodes
25 consist of a positive electrode using lithium ions as electrode reaction species and a negative
electrode constituted by a carboneous material.
5. A solid electrolyte battery according to claim 3, wherein said solid electrolyte
is a gel electrolyte containing ethylene carbonate, polypropylene carbonate and LiPF_6 .
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6. A solid electrolyte battery according to claim 5, wherein said solid electrolyte
is a gel electrolyte further containing vinylene carbonate and/or 2, 4[-
difluoroamsol.]-difluoroanisol.
- 35 7. A solid electrolyte battery according to claim 6, wherein the content of each of
vinylene carbonate and 2, 4[-]-difluoroanisol is not [higher]greater than 5 wt% of the overall
weight of said solid electrolyte.

8. A solid electrolyte battery according to claim 7, wherein a gel electrolyte is employed which is constituted by polyvinylidene fluoride or a copolymer of polyvinylidene fluoride.

5 9. A solid electrolyte battery according to claim 8, wherein a copolymer is used which contains polyvinylidene fluoride and polyhexafluoropolypropylene.

10. A solid electrolyte battery according to claim 9, wherein said gel electrolyte is composed of a copolymer constituted by polyvinylidene fluoride and
10 polyhexafluoropolypropylene such that polyhexafluoropolypropylene is contained in a quantity [smaller]greater than 8 wt%.

11. A solid electrolyte battery comprising:

a positive electrode;

15 a negative electrode disposed opposite to said positive electrode;

a separator disposed between said positive electrode and said negative electrode[.];

and

solid electrolytes each of which is disposed between said positive electrode and said separator and between said separator and said negative electrode, wherein

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said separator is constituted by a polyolefin[e] porous film, said polyolefin[e] porous film has a thickness satisfying a range not [smaller]greater than 5[μ] δmm nor [larger]greater than 15[μ] δmm, a [vacancy ratio]volume porosity satisfying a range not [lower]less than 25 % nor [higher]greater than 60 %, breaking strength [lower]less than 1650 kg/cm² and
25 breaking ductility not [lower than 135 %.]less than 135 %.

12. A solid electrolyte battery according to claim 11, wherein said porous polyolefin[e] film contains polyethylene.

30 13. A solid electrolyte battery according to claim 11, wherein said solid electrolyte is a gel electrolyte containing swelling solvent.

14. A solid electrolyte battery according to claim 11, wherein said electrodes consist of a positive electrode using lithium ions as electrode reaction species and a negative
35 electrode constituted by a carboneous material.

15. A solid electrolyte battery according to claim 13, wherein said solid electrolyte is a gel electrolyte containing ethylene carbonate, polypropylene carbonate and LiPF₆.

16. A solid electrolyte battery according to claim 15, wherein said solid electrolyte is a gel electrolyte further containing vinylene carbonate and/or 2, 4[-]-difluoroanisol.

17. A solid electrolyte battery according to claim 15, wherein the content of each of vinylene carbonate and 2, 4[-]-difluoroanisol is not [higher]greater than 5 wt% of the overall weight of said solid electrolyte.

18. A solid electrolyte battery according to claim 17, wherein a gel electrolyte is employed which is constituted by polyvinylidene fluoride or a copolymer of polyvinylidene fluoride.

19. A solid electrolyte battery according to claim 18, wherein a copolymer is used which contains polyvinylidene fluoride and polyhexafluoropolypropylene.

20. A solid electrolyte battery according to claim 19, wherein said gel electrolyte is composed of a copolymer constituted by polyvinylidene fluoride and polyhexafluoropolypropylene such that polyhexafluoropolypropylene is contained in a quantity [smaller]greater than 8 wt%.

21. A solid electrolyte battery comprising:
a positive electrode;
a negative electrode disposed opposite to said positive electrode; a separator disposed
between said positive electrode and said negative electrode; and
solid electrolytes each of which is disposed between said positive electrode and said separator and between said separator and said negative electrode, wherein
said separator is constituted by a composite material of polyethylene and polypropylene, said polyolefin[e] porous film has a thickness satisfying a range not [smaller]greater than 5[μ] δmm nor [larger]greater than 15[μ] δmm, the shutdown temperature is substantially the same as the shutdown temperature of a separator constituted by polyethylene and the meltdown temperature is [higher]greater than the meltdown temperature of a separator constituted by polypropylene by a range satisfying a range not [lower]less than 10[°] δEC nor [higher]greater than 30[°] δEC.

22. A solid electrolyte battery according to claim 21, wherein said solid electrolyte is a gel electrolyte containing swelling solvent.

23. A solid electrolyte battery according to claim 21, wherein said electrodes

consist of a positive electrode using lithium ions as electrode reaction species and a negative electrode constituted by a carboneous material.

24. A solid electrolyte battery according to claim 22, wherein said solid electrolyte is a gel electrolyte containing ethylene carbonate, polypropylene carbonate and LiPF₆.

25. A solid electrolyte battery according to claim 24, wherein said solid electrolyte is a gel electrolyte further containing vinylene carbonate and/or 2, 4[-]
]-difluoroanisol.

26. A solid electrolyte battery according to claim 25, wherein the content of each of vinylene carbonate and 2, 4[-]-difluoroanisol is not [higher]greater than 5 wt% of the overall weight of said solid electrolyte.

27. A solid electrolyte battery according to claim 26, wherein a gel electrolyte is employed which is constituted by polyvinylidene fluoride or a copolymer of polyvinylidene fluoride.

28. A solid electrolyte battery according to claim 27, wherein a copolymer is used which contains polyvinylidene fluoride and polyhexafluoropolypropylene.

29. A solid electrolyte battery according to claim 28, wherein said gel electrolyte is composed of a copolymer constituted by polyvinylidene fluoride and polyhexafluoropolypropylene such that polyhexafluoropolypropylene is contained in a quantity [smaller]greater than 8 wt%.

30. A solid electrolyte battery comprising:
a positive electrode;
a negative electrode disposed opposite to said positive electrode;
a separator disposed between said positive electrode and said negative electrode; and
solid electrolytes each of which is disposed between said positive electrode and said separator and between said separator and said negative electrode, wherein
said separator is formed by bonding a first separator constituted by polyethylene and a second separator constituted by polypropylene to each other, said separator has a thickness satisfying a range not [smaller]greater than 5[μ] δmm nor [larger]greater than 15[μ] δmm and said separator has a shutdown temperature which is substantially the same as the shutdown temperature of a separator constituted by polyethylene and a meltdown temperature which is substantially the same as the meltdown temperature of a separator constituted by

polypropylene.

31. A solid electrolyte battery according to claim 30, wherein said solid electrolyte is a gel electrolyte containing swelling solvent.

32. A solid electrolyte battery according to claim 30, wherein said electrodes consist of a positive electrode using lithium ions as electrode reaction species and a negative electrode constituted by a carboneous material.

33. A solid electrolyte battery according to claim 31, wherein said solid electrolyte is a gel electrolyte containing ethylene carbonate, polypropylene carbonate and LiPF_6 .

34. A solid electrolyte battery according to claim 33, wherein said solid electrolyte is a gel electrolyte further containing vinylene carbonate and/or 2, 4[-]-difluoroanisol.

35. A solid electrolyte battery according to claim 34, wherein the content of each of vinylene carbonate and 2, 4[-]-difluoroanisol is not [higher]greater than 5 wt% of the overall weight of said solid electrolyte.

36. A solid electrolyte battery according to claim 35, wherein a gel electrolyte is employed which is constituted by polyvinylidene fluoride or a copolymer of polyvinylidene fluoride.

37. A solid electrolyte battery according to claim 36, wherein a copolymer is used which contains polyvinylidene fluoride and polyhexafluoropolypropylene.

38. A solid electrolyte battery according to claim 37, wherein said gel electrolyte is composed of a copolymer constituted by polyvinylidene fluoride and polyhexafluoropolypropylene such that polyhexafluoropolypropylene is contained in a quantity [smaller]greater than 8 wt%.